

## A RAPID, STEAM BATH METHOD FOR RELAXING DRY INSECTS<sup>1,2</sup>

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**ABSTRACT:** The steam-saturated environment of a modified steam bath apparatus provides a safe, reliable method for relaxing dry, fragile insect specimens in 10-15 minutes.

A taxonomist's examinations of specimens at distant museums or even at home often may be limited by time. Using conventional methods, many hours may pass before dried specimens are sufficiently relaxed.

Four methods for relaxing dried insects were recommended by Borror, DeLong and Triplehorn (1976). The first utilizes a sealed, moist disinfected chamber in which specimens must be retained for 24-48 hours. This method is reliable, but too time-consuming. The second method entails submerging specimens in boiling water for a few minutes. Although this is a rapid method, it may cause damage to delicate insects, and is only recommended for beetles and other hard-bodied specimens. In the third method, entire specimens may be relaxed by dipping them in Barber's fluid (a mixture of alcohol, water, ethyl acetate and benzene) for several minutes. Antennae and other delicate structures may be lost in the fluid, and matching specimens to parts is sometimes impossible. A fourth method of relaxing is to inject water into the specimen with a hypodermic needle. This method is particularly useful for Lepidoptera, but is not recommended for small insects.

Gloyd (1980) discussed three additional relaxing methods. The first involves applying household ammonia to the specific body surfaces of dragonflies. This method is effective, but may cause fading of body colors. A second method similarly utilizes "OT" solution (sodium dioctyl sulfosuccinate), a surface active agent which is used in conjunction with insecticides, and is available commercially. This chemical may cause a cloudy film on specimens. A third method is utilized for soft-bodied insects which have been stored in alcohol, and over time the alcohol has evaporated. These insects may be restored by soaking them in a salt solution for 24-48 hours.

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The aforementioned methods, although effective, may be damaging to delicate insects and are often messy. To provide a more convenient alternative to these, we have devised a fast and gentle method for relaxing brittle arthropods. This method simply involves placing the specimen in a steam bath apparatus for 10-15 minutes. We recommend a device similar to that shown in Figure 1. Any pot with a lid will suffice to produce steam, but we prefer a one liter Pyrex beaker with a watchglass for a lid. A wire screen or sieve can be utilized to provide a solid platform on which to place the specimens. The screen should be located a few cm above the water surface and about ten cm below the lid. This arrangement provides adequate clearance to place a large cork with several pinned insects attached to it on the screen platform. The watch glass should be placed upside down to allow condensing water droplets to slide down the inside of the beaker instead of dropping onto the specimens.

Water should be approximately five cm deep in the beaker. It is important to check the water level periodically. If there is not sufficient steam the intense heat may dry the specimen further, and even may cause it to disintegrate. The heating plate should be set just high enough to boil the water. Unmounted specimens may be placed in small Syracuse watch glasses to avoid unnecessary handling. Condensation of water in the steam bath may cause saturated wings or antennae to stick to wet surfaces. This can be avoided by placing a small piece of absorbent tissue paper between the watch glass and the insect.

Special attention should be given to insects mounted on points. This procedure could cause water-soluble adhesives to dissolve, allowing specimens to fall off points. To prevent mixing of specimens and labels, and to protect the specimens should they become detached, it is recommended that pinned specimens be placed at least 3 cm apart, with a ball of cotton pinned directly underneath each specimen.

Specimens of Coleoptera, Ephemeroptera, Plecoptera, Orthoptera, Trichoptera, Odonata and Megaloptera have been successfully relaxed within 10-15 minutes of having been placed in the steam bath. Genitalia of large stag beetle were easily extracted, and wings and appendages of other specimens were pliable following 10-15 minutes of exposure to the dense steam. Larger, heavily sclerotized specimens occasionally may require a slightly longer exposure to the steam.

Many different combinations of laboratory or kitchen implements may be modified to create a suitable steam bath. This method was first performed by placing a few caddisflies in a one-egg poacher. A six-egg poacher might prove to be useful to relax a number of different lots of specimens.

## LITERATURE CITED

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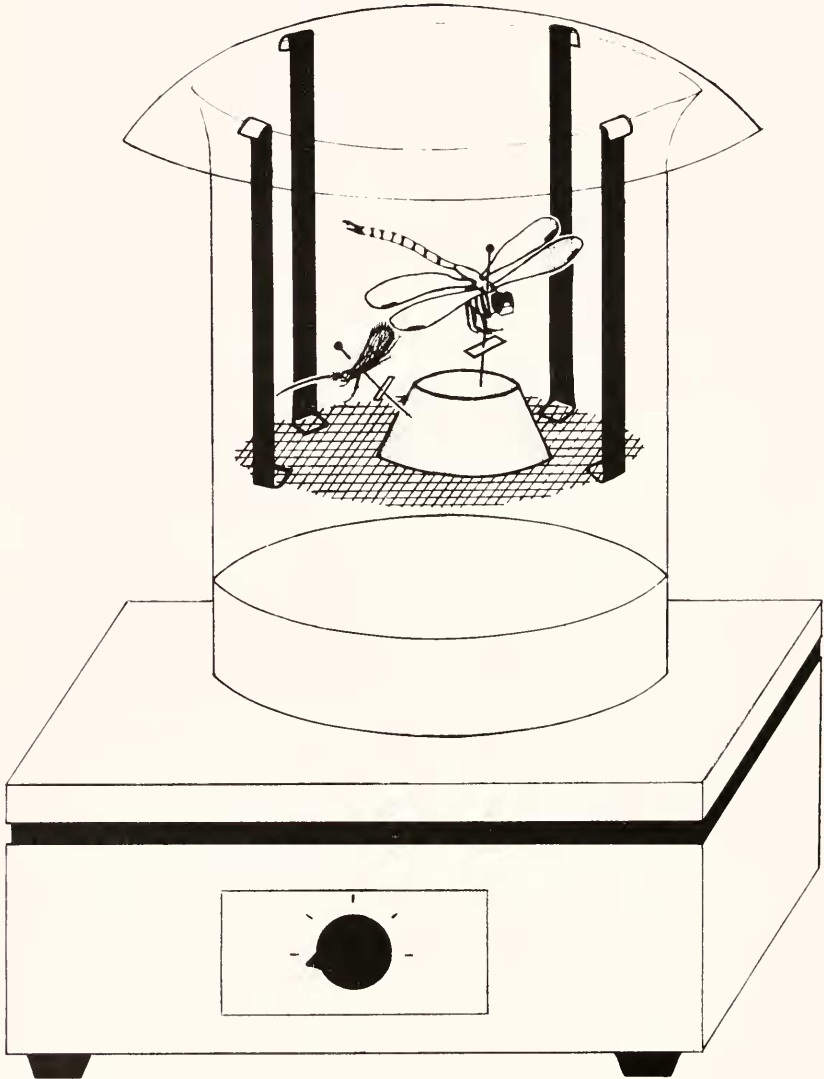


Fig. 1. A modified steam bath for relaxing dry insects.